

2.3

The “+ / –” Connection

You have probably noticed that addition and subtraction are related to each other. You can write any addition sentence as an equivalent subtraction sentence. You can also write any subtraction sentence as an equivalent addition sentence.

Getting Ready for Problem 2.3

The chip board below shows a value of $+5$.



- There are two possible moves, one addition and one subtraction, that would change the value on the board to $+2$ in one step. How would you complete the number sentences to represent each move?

$$+5 + \blacksquare = +2 \text{ and } +5 - \blacksquare = +2$$

- There are two possible moves, one addition and one subtraction, that would change the value on the board to $+8$ in one step. How would you complete the number sentences to represent each move?

$$+5 + \blacksquare = +8 \text{ and } +5 - \blacksquare = +8$$

- Can you describe a general relationship between addition and subtraction for integers?

Problem 2.3 Addition and Subtraction Relationships

Use your ideas about addition and subtraction of integers to explore the relationship between these two operations.

A. Complete each number sentence.

1. $+5 + -2 = +5 - \blacksquare$

2. $+5 + +4 = +5 - \blacksquare$

3. $-7 + -2 = -7 - \blacksquare$

4. $-7 + +2 = -7 - \blacksquare$

B. What patterns do you see in the results of Question A that suggest a way to restate any addition problem as an equivalent subtraction problem?

C. Complete each number sentence.

1. $+8 - +5 = 8 + \blacksquare$

2. $+8 - -5 = 8 + \blacksquare$

3. $-4 - +6 = -4 + \blacksquare$

4. $-4 - -6 = -4 + \blacksquare$

D. What patterns do you see in the results of Question C that suggest a way to restate any subtraction problem as an equivalent addition problem?

E. Write an equivalent problem for each. Then find the results.

1. $+396 - -400$

2. $-75.8 - -35.2$

3. $-25.6 + -4.4$

4. $+\frac{3}{2} - +\frac{1}{4}$

5. $+\frac{5}{8} + -\frac{3}{4}$

6. $-3\frac{1}{2} - +5$

ACE Homework starts on page 32.